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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,960	01/12/2004	James B. Blackmon JR.	7784-160DVC	3011

27572 7590 10/18/2004

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EXAMINER

SCHATZ, CHRISTOPHER

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/755,960

Applicant(s)

BLACKMON ET AL.

Examiner

Christopher T Schatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 9, 12, 15, 17, 18, 20 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 11, 13, 14, 16, 19 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1 Jan 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 9, 12, 15, 17, 18, 20, and 25 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 14 Sept 2004.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. '191 in view of Francel et al. '371. Blackmon et al. discloses a method of fabricating a receiver system, said method comprising of using an adhesive 22 between a mirror 12 and a backing plate or facet 10 to bond said mirror to said facet or backing plate. Blackmon et al. does not explicitly disclose a method as stated above wherein said mirror is maintained at a first temperature and the backing plate is maintained at a second temperature. Francel et al. discloses a method of fabricating a receiver to be used as a solar reflector (column 1, line 39), said method comprising:

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maintaining a glass substrate 14 at a first temperature (column 4, line 25);

maintaining a facet at a second temperature, wherein said second temperature is greater than said first temperature (column 4, lines 21-31) (Note claim 2). Examiner interprets a facet to mean a small plane or surface.

Blackmon et al. and Francel et al. are analogous art because they are from the same field of endeavor: the manufacture of solar panels. Keeping the glass temperature below that of the said applied facet layer is advantageous because, as disclosed by Francel et al., it keeps said glass material below the softening point, thus increasing the strength of the material. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to keep the glass temperature below that of the applied facet layer for the reasons disclosed by Francel et al. above in the process of making the panel of Blackmon et al.

As to claim 4, Francel et al. discloses a method wherein the facet material and the glass substrate material have different coefficients of thermal expansion such that said glass substrate experiences a compressive stress when said glass substrate and said facet are cooled during the manufacturing process (column 1, lines 64-67, column 2, lines 1-6). Francel et al. further discloses that having different coefficients of thermal expansion strengthens the glass substrate material (column 6, lines 2-6).

As to claim 11, Blackmon et al. discloses that above said adhesive 22 is thermally active, and that said adhesive is bonded to the mirror by allowing said adhesive to cure under the application of heat. Allowing said thermally active adhesive to cure under the application of heat has the advantage of increasing the bonding rate (column 5, lines 16-23). Blackmon et al. further discloses that said mirror and said facet each have a thermal coefficient of expansion

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substantially similar to each other. Having similar coefficients of thermal expansion, according to Blackmon et al., prevents the mirror from cracking or straining during large temperature changes due to weather conditions (column 3, lines 14-17).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. in view of Francel et al. as applied to claim 1 above, and in further view of Sadoune et al. '997. Blackmon et al. and Francel et al. disclose a method as stated in claim 1, but both references fail to disclose the method wherein the mirror is maintained at a first temperature below the operating temperature of the mirror when said reflector is in use. Sadoune et al. discloses a method of producing a solar reflector, wherein a mirror is maintained at a temperature below that of the operating temperature of the mirror (column 1, lines 42-46). Maintaining said mirror at said first temperature below the operating temperature of said mirror is advantageous because, as disclosed by Sadoune et al., decreasing the cost of the manufacturing process (column 1, lines 37-39). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to maintain said mirror at a temperature below that of its operating temperature during said production process for the reasons disclosed by Sadoune et al. above in the process of making a solar panel assembly as set forth above by the combination of Blackmon et al. and Francel et al.

5. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. in view of Francel et al. as applied to claims 1 and 11 above, and in further view of Deakin '107. Blackmon et al. and Francel et al. disclose a method as stated in claim 1, but both references fail to disclose the method wherein said facet is formed with a cooling fluid channel. Deakin discloses a method of manufacturing a facet (Figure 4), said facet comprising of a

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channel 11 through which a cooling fluid 14 passes through. Manufacturing said facet or support such that a cooling channel is formed is advantageous because, as disclosed by Deakin, said cooling channel improves heat transfer (column 3, lines 23-26) in the solar assembly. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to provide said facet or support with a cooling channel for reasons disclosed by Deakin in the process of making a solar panel assembly as disclosed by Blackmon et al. and as modified by Francel et al.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. in view of Francel et al. as applied to claim 1 above, and in further view of Yogev et al. '369.

Blackmon et al. and Francel et al. disclose a method as stated in claim 1, but both references fail to disclose the method wherein said facet has at least one cooling fin attached to it. Yogev et al. '369 discloses a reflector made of a facet for use in a solar power plant (column 3, lines 31-35), said facet having at least one cooling fin attached to it (column 3, lines 44-46). Attaching a cooling fin to said facet is advantageous because, as disclosed by Yogev et al. '369, said cooling fin increases the efficiency of the cooling process of said reflector (column 3, lines 44-46).

Yogev et al. '369 further discloses that said cooling fin helps to decrease the risk of delamination when said facet and said mirror have different coefficients of thermal expansion (column 3, lines 40-46), as is the case in for this claimed reflector. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to attach at least one cooling fin to said facet to increase the efficiency of the cooling operation disclosed by Yogev et al. '369 in the process of making the solar panel assembly as disclosed by Blackmon et al. and Francel et al.

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7. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. in view of Francel et al. as applied to claim 1 above, and in further view of Yogev et al.

'140. Blackmon et al. and Francel et al. disclose a method as stated in claim 1, but both references fail to disclose the method wherein the fabricated mirror is concave or convex. Yogev et al. '140 discloses a solar reflector 22 and further states that said reflector can be convex or concave (column 4, lines 50-53). Above said disclosure by Yogev et al. '140 indicates that the use of either shape is well known in the art. As such, the shapes would have been understood to have been functional equivalent alternate expedients. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use either a convex or concave reflector as suggested by Yogev et al. '140 in the solar assembly as disclosed by Blackmon et al. and Francel et al.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al., Francel et al. and Deakin as applied to claims 1 and 5 above, and further in view of Laing '380. Blackmon et al., Francel et al., and Deakin disclose a method as stated in claims 1 and 5, but the references fail to disclose the use of a serpentine-shaped cooling channel. Laing discloses a solar reflector 50, said reflector including a serpentine-shaped cooling channel 18. The use of said serpentine-shaped cooling channel is advantageous because said serpentine-shaped cooling channel maximizes the heat transfer area. Blackmon et al., Francel et al., Deakin, and Laing are all analogous art because they are from the same field of endeavor: the manufacture of solar panels. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use a serpentine-shaped cooling channel to maximize heat transfer as suggested

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by Laing '380 wherein a cooling channel was added as disclosed by Deakin in the solar panel assembly of Blackmon et al. and Francel et al.

9. Claims 14, 19, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied in paragraph 2 above and in further view of Sadoune et al. '997. Blackmon et al. and Francel et al. disclose a method of fabricating a solar receiver system as specified in paragraph 2.

In addition to the disclosure of paragraph 2, Francel et al. discloses a method of fabricating a glass mirror to be used as a solar reflector (column 1, line 39), said method comprising:

heating a facet to a first temperature, said temperature being at a higher temperature than the operating temperature of said facet during use with said solar receiver (column 4, lines 21-31);

placing said facet at said first temperature adjacent to a mirror maintained at a second temperature below that of said first facet temperature (column 4, lines 21-31).

Saduone et al. discloses a method of producing a solar receiver wherein a mirror 1 and a facet 4 are brought into contact with one another using a tool (figure 3) while a thermally conductive adhesive 5 is allowed to cure, and said tool is removed from said reflector such that a compressive stress is imparted upon said reflector (column 7, line 26-35). Heating said facet to said elevated temperature is advantageous because it facilitates the bonding the process. Additionally, holding said facet and said mirror in contact with each other during bonding is advantageous, because, as disclosed by Sadoune et al., doing so prevents delamination of said facet from said mirror (column 6, lines 43-49). Therefore, at the time of the invention it would

have been obvious to a person of ordinary skill in the art to heat said facet to said elevated temperature and to hold said facet and said mirror in contact with each other during the bonding process for the reasons disclosed by Sadoune et al. in the process of making the solar panel assembly as set forth above in the paragraph 2.

As to claim 23, Sadoune et al. discloses a method wherein said facet is made of steel (column 3, line 30).

As to claim 24, Sadoune et al. discloses a method wherein said mirror is maintained at a temperature below the operating temperature that said mirror will experience during the operation of said reflector. (column 1, lines 40-46).

10. Claims 16 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. in view of Francel et al. in further view of Sadoune et al. as applied to claims 14 and 19 above, and in further view of Yogev et al. '369. Blackman et al., Francel et al., and Sadoune et al. disclose a method as stated in claims 14 and 19, but the references fail to disclose the method wherein a solar receiver has at least one cooling fin attached to it. Yogev et al. '369 discloses a reflector made of a facet for use in a solar power plant (column 3, lines 31-35), said facet having at least one cooling fin attached to it (column 3, lines 44-46). The advantage, as disclosed by Yogev et al. '369, of using at least one cooling fin is discussed in paragraph 6 above. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the cooling fin of Yogev et al. '369 in the solar panel assembly of Blackmon et al., Francel et al., and Sadoune et al. to improve the efficiency of the cooling operation.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Blackmon et al. in view of Francel et al. in view further of Sadoune et al., as applied to claim 19

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above, and in further view Laing '380. Blackmon et al., Francel et al., and Sadoune et al. disclose a method as stated in claim 19, but the references fail to disclose a serpentine-shaped cooling channel. Laing discloses a solar reflector 50, said reflector including a serpentine-shaped cooling channel 18. The advantage of using including serpentine-shaped cooling channels is discussed above. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a serpentine-shaped cooling channel as suggested by Laing in the solar panel assembly of Blackmon et al., Francel et al., and Sadoune et al. to maximize the heat transfer area.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tayler et al. '445, Miyatani et al. '292, Yaba et al. '351, Schnitz-Goeb et al. '809, Harrison '783, Girerd '518, Rogers et al. '865, Schwab '007.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Christopher T Schatz** whose telephone number is **571-272-1456**. The examiner can normally be reached on 8:00-6:30, Monday -Thursday, 8:00-5:30 every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on 571-272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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